

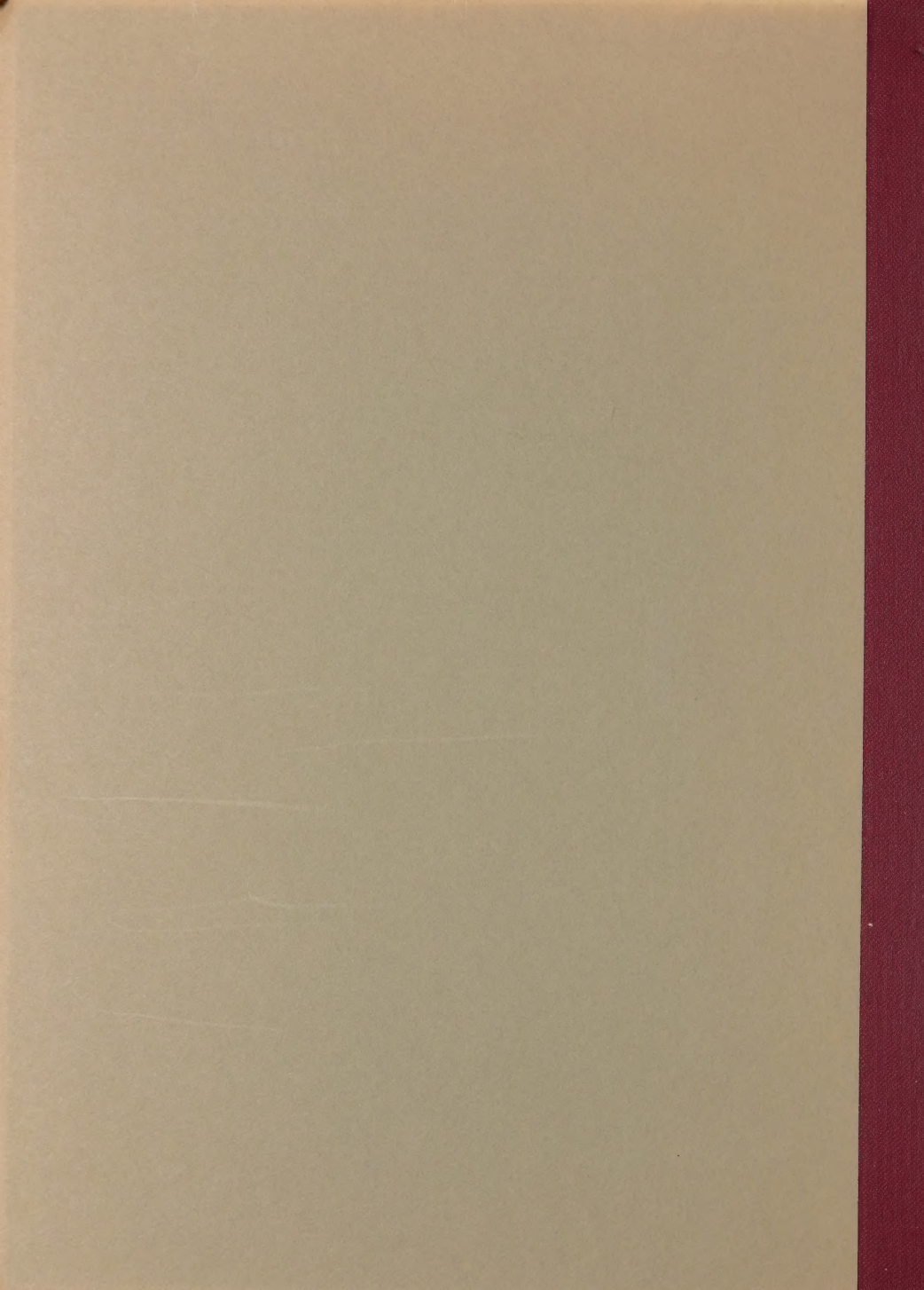
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Land capability and develop-
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LAND CAPABILITY AND


DEVELOPMENT CONSTRAINTS

MAP - MIDWESTERN ONTARIO

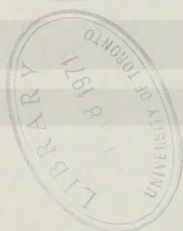
ECONOMIC REGION

Regional Development Branch,
Department of Treasury & Economics

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A Report

Prepared by the

Special Projects Section

of the

Regional Development Branch

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LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS MAP

The main purpose of the Land Capability and Development Constraints Map is to pinpoint on a regional basis some specific land capabilities and to relate these capabilities to existing land use (Table 1). It will also provide a means of evaluating the land capability and physical development constraints associated with the possible expansion requirements of selected urban centres (Tables 2 and 3). Although the technique developed is applied specifically to the Midwestern Ontario Economic Region, it should be viewed as being applicable to the Province as a whole.

The Land Capability and Development Constraints Map of the Midwestern Ontario Economic Region at the scale of 1:250,000 (3.945 miles to one inch) is a composite of the following components.

A. Base Map

The base map, over which land capability and development constraint overlays are placed, consists of a generalized regional land use map produced by the Regional Development Branch (See Appendix II). The land use map depicts as land use categories the following: residential, seasonal residential, commercial, industrial, forestry, agriculture, outdoor recreation, quarries, sand and gravel pits, water bodies, Indian Reserves, airports, railways and major roads.

B. Overlay Maps (See Appendix I for method and criteria for overlay technique)

1. The following overlays are prepared from Canada Land Inventory Capability Maps:

- (a) Land of high soil capability for agriculture

- (b) Land of high recreation potential
- (c) Land of high potential for forest production
- (d) Land of high potential for production of wildlife (ungulates)
- 2. Land physically unsuitable for intensive urban development as a result of one or a combination of the following factors:
 - (a) Excessive slope
 - (b) Land liable to flooding or waterlogging
 - (c) Water bodies, poorly drained or marsh areas
 - (d) Large excavated areas
 - (e) Airport noise zones
- 3. Woodland areas
- 4. Mineral resource. Zones

URBAN LAND SUITABILITY SELECTION PROCESS

The Land Capability and Development Constraints Map represents a simplified urban suitability selection process whereby the propensity of the region to support different land uses is revealed. It permits the examination of the following components:

- 1. existing major land uses;
- 2. prime agriculture, recreation, forestry and wildlife potential producing areas;
- 3. areas unsuitable for intensive urban development such as areas of excessive slope, water bodies, land liable to flooding, poorly drained or marsh areas and airport noise zones; and
- 4. other factors such as woodlands and mineral resource zones.

Out of the urban suitability selection process areas where urban development should be limited were outlined. The remaining land could then be evaluated in terms of bearing capacity and development priorities established according to prime and secondary suitability for urban land uses. Urban aggregates in acres can then be indicated for the areas designated as being suitable for future urban expansion.

The least productive agricultural lands should emerge as the area most suitable for urbanization. If examination reveals that this provides inadequate space for future urban growth and that other lands would have to be utilized -- then clearly some agricultural land must be absorbed by urbanization.

Both the Class 2 and Class 3 agricultural land and woodland should then be investigated for urban suitability based on the characteristics of the soils for the provision of foundations and for their usability for septic tanks. These qualifications would determine which of the better agricultural and forested area should be designated as suitable for urban development.

A general description and interpretation of the Land Capability and Development Constraints Map is presented in Table 1. Table 1 considers the patterns of land use, land capabilities and development constraints on a regional and county level in the Mid-western Ontario Region. The intention of this analysis is to discover, by means of an elimination process:

1. the intrinsic suitability of the region for certain land uses;
2. those areas regionally suited for urban development.

The form of this elimination procedure essentially involves:

- (a) a description of the pattern that the capability and restraint areas take, relative to the county and region, and
- (b) an account of how these capabilities and restraints relate to one another.

The crucial variable, land use is also incorporated into the analysis. The importance of understanding land use is underscored by its function in delineating the areal extent, distribution and interdependencies of human activity. When land capabilities and restraints are superimposed on the generalized land use map, the pattern of potential urban development areas is revealed.

Where the traditional method of urban growth and land use determination may have been annexation and zoning, the direction and type of urban development now become based upon physical and ecological perspectives.

LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS FOR SELECTED URBAN CENTRES

Tables 2 and 3 evaluate and summarize selected urban centres in the Midwestern Ontario Region as they relate to specific land capabilities and development constraints. For the purpose of this analysis the prime capability classes of all sectors and physical

development constraint factors were considered to be of equal value.

The selected urban centres were categorized according to their apparent physical suitability for future urban development. From an examination of Table 3 the following grouping of urban centres was formed:

- | | |
|---|--|
| (a) High Suitability for
<u>Urban Development</u> | Exeter
Harriston
New Hamburg
Seaforth |
| (b) <u>Adaptable</u> (Urban development
difficulties can be accommodated) | Clinton
Listowel
Mitchell
Mount Forest
St. Mary's |
| (c) <u>Problem</u> (Definite development
constraints which will be
difficult to overcome) | Elmira
Galt-Preston
Goderich
Guelph
Kitchener-Waterloo
Stratford
Wingham |

The classification system presented in Table 3 could be refined in terms of capacity to fulfill defined urban growth objectives for each urban centre. Furthermore, an examination of economic and social processes operating on the selected urban centres and a comparison of these to physical suitability ratings would further assist in determining the growth potentials for each urban centre.

REGIONAL DECISIONS

The Land Capability and Development Constraints Map provides a general indicator of land use capability within a region. It assists in formulating a spatial plan for the regional investment of money. For example, it enables one to concentrate investment on recreation "hot spots", that is, areas classified as having a high potential for recreation facility development. The actual amount and distribution of regional recreation investment would depend on the scale and range of activities at each potential site. This information would be determined from an analysis of the more detailed Ontario Recreation Land Capability maps.

The environmental evaluation of alternative regional designs is another essential function of the Land Capability and Development Constraints Map. It can assist in the goals fulfilment test of different development patterns. Furthermore, analysis of the Map can contribute to the selection of the optimum comprehensive plan of development.

The Land Capability and Development Constraints Map shows the implication that the land and its processes display for prospective development and its form. However, it must be emphasized that this does not constitute a plan. The plan can evolve only when there is sufficient information on such factors as:

1. nature of demand
2. locational and resource characteristics
3. the capacities to realize objectives
4. the social and economic goals of the region

Whatever the characteristics that emerge from the above factors, the formulation of a plan for the Midwestern Ontario Region should respond to an understanding of the ecological processes and natural resources of the region. The following tables illustrate the importance of analysing the interplay of ecological and physical factors in order to determine the optimum location and distribution of major regional land use activities.

TABLE 1

DESCRIPTION AND INTERPRETATION OF THE LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS MAP

	Class 1 Soil Capability for Agriculture	Classes 2 and 3 Soil Capability for Agriculture	Class 1 Capability for Wildlife(Ungulates)
ERIN AND DUNDAS COUNTIES	<p>- Generally two broad areas of first class agricultural land are found in the region: (a) a northeast-southwest pattern extending from northeastern part of Wellington County to approximately Highway 8 in Perth County, (b) a north and south pattern extending from southern Perth and Huron Counties north to Highway 19. A disjointed northward extension reaches the northern boundary of Huron County.</p> <p>- Some areas (for example, the western and northwestern part of the region) are void or partially void of this agricultural category. Sizes of tracts vary from less than 1 to over 100 square miles.</p>	<p>- Combination of Classes 2 and 3 agricultural land extends coverage to almost entire remaining area. Agricultural land in 4-7 category is most notable in eastern, southeastern and northwestern parts of the Region. Sporadic instances of 4-7 soil, however, occur throughout the Region.</p>	<p>- Area of wildlife capability closely approximates Class 1 soil capability pattern, i.e. the northeast-southwest formation as well as the North-South formation.</p>
WATERLOO COUNTY	<p>- As a per cent of total land area in Waterloo County, amount of Class 1 land is small; largest tracts are found in two northern townships, Wellesley and Woolwich. Little or no Class 1 agricultural land is located northeast, east, south and west of Kitchener-Waterloo.</p>	<p>- Inclusion of Class 2 and 3 category substantially increases county enrollment. Conspicuous areas of Class 4-7 soil are located between Kitchener-Waterloo and Preston (Waterloo Township); also due south of Hespeler; a sizeable portion of North Dumfries Township (approximately 50%) is also absent of 1-3 soil capability.</p>	<p>- The northern townships are predominantly in Class 1 ungrazed land (coincident with Class 1 agricultural). Large tract noted west of Kitchener-Waterloo in Wilmot and Waterloo Townships.</p>
WELLINGTON COUNTY	<p>- As in Waterloo County, the northern townships possess the greatest portion of primary agricultural land; for example, Arthur, West Luther, Maryborough (these are located within the northeast-southwest belt). A lack of sizeable amounts of Class 1 land in the northeast (Minto Township) and southeast (Erin and Puslinch Townships) is noted. As in the Kitchener-Waterloo area, a marked absence of Class 1 agricultural land south of main urban centre, that is Guelph.</p>	<p>- Wellington County appears to possess the greatest amount of residual agricultural land relative to its total land area, (that is Class 4-7). This is especially notable in Erin and Puslinch Townships. Other areas relatively void of Classes 1-3 land include Minto and West Luther Townships.</p>	<p>- Relationship between Class 1 agricultural and ungulate capability appears evident except for northeast Townships; No. 1 capability occurs mainly through the centre of the County; capability less than Class 1 occurs south of Peel Township, east of Hwy. 6 (Erin, Eramosa and Puslinch Townships), and in the northern townships for example Minto.</p>
PERTH COUNTY	<p>- Appears by far to possess greatest amount of Class 1 agricultural land as per cent of its total land area. Large but somewhat perforated area in the south, that is townships of Fullarton, Ellice, North Easthope, South Easthope, and Downey, the main urban centre of Stratford located within the Class 1 land.</p> <p>- Largest single tract of Class 1 agricultural land is found in northern part of Perth County (Elms, Mornington, Wallace Townships); occupies approximately 120 square miles.</p>	<p>- All but a few square miles (roughly less than 10) of Perth County is enclosed by 1-3 agricultural land. Perth by far possesses the greatest potential for agriculture from a capability standpoint.</p>	<p>- Overlap of capability occurs to some degree; not however, in area circumscribing Stratford area or in Wallace and Elms Townships in northern Perth.</p>
HURON COUNTY	<p>- Two main Class 1 areas are located (a) between Hwy. 19 and 8 (approximately 50 square miles) in McMillan and Muller Townships. (b) in the band 1-4 miles wide and 21 miles in length, straddling Hwy. 4 and extending from Centralia to Bayfield River.</p> <p>- Other Class 1 areas are much smaller, while some townships are almost completely lacking, in Class 1 areas for example, West Wawanosh, East Wawanosh and Morris.</p>	<p>- The amount of high capability agricultural land is greatly increased by the addition of the Class 2 and 3 category; however some 4-7 Class areas remain, for example, east of Zurich in Hay Township (approximately 10 square miles). Several smaller areas also occur throughout the County.</p>	<p>- Coincidence of capabilities is strongest in Huron County (that is ungulates and Class 1 agriculture); further extension of primary ungulate capability just to south of Goderich; northward, area is void of this capability.</p>

TABLE 1 Cont'd.

	Land of Outstanding Outdoor Recreation Capability	Land physically Unsuitable for Intensive Urban Development	Land Use Relationship
ERIN KITCHENER	- A wide assortment of outdoor recreation capabilities are present in the Midwestern Region; for example, beaches, canoe-tripping and viewing. Most of the areas of high recreational potential are concentrated in the western and eastern parts of the region. All recreation areas appear to be within easy access of urban centres. Most areas are presently under some form of recreational development and are under Conservation Authority jurisdiction. The recreation potential of the region is suited to low intensity or passive recreation use. Many of the potential recreation sites are man-made.	- Two primary areas unsuitable for intensive urban development are found in the Midwestern Region: (a) northwestern part of Region, (b) southeastern part of Region. However, the very sporadic distribution of many unsuitable locations demands further study at the micro level. Physically difficult land coinciding with Class 1 agricultural capability is minimal; mainly located on Classes 2-3 and 4-7.	- Generally Class 1 agricultural capability coincides with agricultural land use; more woodlots are found on Class 2 and 3 land than on primary capability. - Many outdoor recreation potential areas already being utilized for this purpose.
ERIN KITCHENER	- Wide range of activities available in Waterloo County; proximity to major urban centres. Recreation potential in Waterloo County is concentrated along two rivers, Conestogo and Grand Rivers; and two small lakes, Sunfish and Paradise Lakes. Viewing, angling, topographic patterns and canoe tripping are recreation features associated with the above rivers and lakes. Waterloo has two potential ski areas conveniently located in respect to the major populated areas of Kitchener and Galt. One ski area is north of Centreville off Hwy. 8, while the second location is southeast of Doon off Hwy. 401. Alder Creek widens north of New Dundee providing potential for cottaging, angling and wetland wildlife. West of Wrigley corners is a large woodland area appealing to bird watchers, pleasure walkers, and viewers of topographic features. In general, Waterloo County has an excellent potential for day-use recreation activities both summer and winter.	- Profusion of unsuitable land noted especially in southern part of North Dumfries Township. River courses appear to act as biggest development barriers.	- Significant amount of agricultural activity occurring in Class 2 and 3 capability land; south of Preston not occurring in Class 1-3 land; similarly between Kitchener-Waterloo and New Hamburg.
ERIN KITCHENER	- Several unique recreation areas available in County, for example, Elora Gorge, Luther Marsh; driving distance between recreation areas and most parts of the County is minimal.	- Physically unsuitable land is most prevalent to east and south of City of Guelph, that is, Erin and Puslinch Townships; unsuitable areas are found mainly on Classes 4-7 agricultural land capability.	- Most Class 1 agricultural land is being utilized, though some is still covered by woodlots; most woodland areas are in Class 4-7 capability (Erin Township) or Class 2 and 3 capability (Minto Township); prime ungulate areas coincide generally with cleared farm areas. Most areas of recreation potential are being utilized for various recreation activities.
ERIN KITCHENER	- Possesses fewest number of outstanding outdoor recreation areas. Perth County has one outdoor recreation land unit of regional significance. It is a Class 4 recreation feature located east of St. Mary's on Trout Creek and offers viewing of the Wildwood Dam area and angling.	- Perth County least affected by unsuitable land. River course of Thames probably greatest barrier.	- Coincidence of agricultural activity and Class 1 capability noted; much agricultural activity also on Class 2 and 3 land; amount of woodland is small relative to other counties; present growth of Stratford area occurring at expense of Class 1 agricultural land.
ERIN KITCHENER	- Huron County has one area rated as Class 1, very high potential for outdoor recreation and a number of Class 3 and 4 land units with a moderately high to moderate potential for outdoor recreation. The Lake Huron shoreland at Grand Bend is rated as a Class 1 recreation unit, the only area in the County suitable for intensive recreation use. Class 3 and 4 shoreland units with beaches as the dominant feature is distributed along the Lake Huron shoreline. There is intensive cottage development along the entire shoreline. Deep water boat tripping and family boating areas are found at Bayfield and Port Albert. Potential exists for recreation activities such as angling, canoe tripping and organized camping on the Maitland River east of Godrich. Viewing as either a dominant or subordinate feature along the Lake Huron shoreline. In general, Huron County provides outdoor recreation suitable for low intensity summer time participation.	- River valleys of Bayfield and Maitland Rivers provide development barriers; wide scattering of physically unsuitable land noted also in northern townships; for example, Twinberry, Havick, Morris, East and West Wawanosh Townships.	- Except for the northern townships most of the Class 1 land is being utilized; similarly much of the Class 2 and 3 land is in agricultural production. There is a large amount of woodland in the northern townships - this is situated on Class 2 and 3 land. Prime ungulate capability areas occur mainly on cleared land. Development along Highway 4 is using Class 1 land. The recreation area along the Lake Huron shore is being utilized.

TABLE 1 Cont'd.

AREAS POSSESSING POSSIBILITIES FOR LARGE SCALE URBAN DEVELOPMENT

REGIONAL
DEVELOPMENT

- The areas selected are not intended to necessarily fulfil the demand for large-scale urban development. Indeed, it is understood that growth can and will occur elsewhere, especially where existing centres occur. However, areas included herein, possess the following characteristics which make them attractive from a land capability and development constraint standpoint: (i) generally did not infringe on Class 1 agricultural land, (ii) refrained from infringement on Class 2 and 3 land as much as possible, (iii) did not infringe on outstanding outdoor recreation areas but were easily accessible, (iv) were close or relatively close to certain existing centres, so growth could focus around a particular centre, (v) as much as possible tried to avoid physically unsuitable land.

Note that alternatives were not offered but should necessarily be included.

WATERLOO
COUNTY

- Two areas were denoted: (i) east of Preston-Galt, extending from Hespeler to southernmost boundary of North Dumfries Township (approximately 27 square miles), (ii) west of Kitchener, extending roughly from New Hamburg, east to the Kitchener-Waterloo area (approximately 45 square miles).
- Both areas provide natural and probable zones of development for large, already-existing urban centres.

WELLINGTON
COUNTY

- Two areas were delineated: (i) east of Pergus, with main portion situated in Erin Township (approximately 55 square miles), town of Erin is closest centre, (ii) a 38 square mile area north of Harriston. Growth here however is at expense of a small area (2 square miles) of Class 1 agricultural land.

PERTH
COUNTY

- No areas suggested for development.

WYOMING
COUNTY

- An area approximately 16 square miles east of Zurich, mainly in Hay township - it is immediately adjacent to a tract of Class 1 agricultural land: large conservation area nearby.

TABLE 2

LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS FOR SELECTED URBAN CENTRES IN MIDWESTERN ECONOMIC REGION

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Land Capabilities			Wildlife Areas (Regulates)
			Prime Recreation Areas	Woodlands	Mineral Resources	
Galt - Preston	none within 0-3 mile zone ² from existing built-up urban areas	area within 0-3 mile zone west and north of Galt and southwest and north of Preston -low capability agricultural land in 0-3 mile zone east and 1-3 mile zone southwest of Galt and 2-3 mile zone east of Preston	Pushlinsh Lake within 2-3 mile zone of Galt and Preston is a Class 3 recreation land unit with beach, organized camping, angling and wetland wildlife as recreation features	several areas in 2-3 mile zone to south, to southeast of Puslinsh Lake -existing extraction operations	potential sand and gravel deposits in spillway running north-south through Galt and Preston	none within 0-3 mile zone
Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Physical Development Constraints			
			Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones	
Galt - Preston	large areas to southwest of Galt -severely restricts development in that direction -no restriction on growth of Galt to the east	Grand River constrains physical development of Preston to the northwest and south	water bodies and marsh areas scattered southwest in 0-3 mile zone to the south of Galt -restricts development in this area	a number of small areas southwest of Galt in 1-3 mile zone -large area in 0-1 mile zone east of Preston will limit future development in that direction	none within 0-3 mile zone	

- Urban centres which are being examined by the Regional Development Branch as possible growth areas
- A zone of 3 miles beyond the built-up urban areas of each centre is evaluated in terms of land capability and development constraint factors. This is the critical zone in determining the future expansion possibilities of any centre.

Land Capabilities

Urban Centre	Class I Agricultural Land	Class II & III Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
Goderich	none within a one mile radius. A negligible amount in the two and three mile zone to southeast. Physical expansion will not infringe heavily on Class I land	remainder of land area within 0-3 mile zone -no Class 4-7 agricultural land for expansion of Goderich -therefore future expansion must take place on Class 2 and 3 land	two areas within 0-3 mile zone: 1. Large area south-east of Goderich on the Maitland River with Class 3 and 4 recreation capability for viewing, topographic patterns, angling, canoe tripping, historic sites and organized camping as recreation features. 2. Lake Huron shoreline north and south of Goderich with Class 3 and 4 recreation capability for lodging, viewing, beach, camping and topographic patterns as recreation features -limits development to southeast	significant areas of woodland along Maitland River north and to the southeast -limits development in this area	possible clay producing area north and south of Goderich along Lake Huron shoreline -no existing extraction operation	Class one land for ungulates southeast of Goderich -same zone as Class one agricultural land
Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones	
Goderich	within 0-3 mile radius southeast and east and within one mile radius north or Goderich associated with the Maitland River	floodplain area of Maitland River to north and east	Lake Huron prevents westward expansion of Goderich. Maitland River and branches limit expansion to north, east and southeast	none within 0-3 mile zone from existing urban built-up limits	small airport immediately north of Goderich -study required	

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
Guelph	There is little number one land around Guelph (e.g. Puslinch Township to south has none) There is some Class one land in 2 and 3 mile zone west of Guelph. Physical expansion of Guelph would not do serious damage to prime agricultural land provided development was not west by northwest - a fairly sizeable tract exists in that direction	remainder of land within 3 mile zone is Class 2 or 3 -therefore future expansion must take place on Class 2 or 3 land	none within 0-3 mile zone	large area east of Guelph in 1-3 mile zone -smaller woodland areas to northwest, northeast and to south -development should be prohibited in large area to east	potential sand and gravel along spillway running north and south of Guelph within 0-3 mile zone -existing extraction operation	Class one land for ungulates west of Guelph -same zone as Class one agricultural land
Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones	
Guelph	a number of small areas within 2-3 mile zone	along Eramosa River to east and south	a number of small areas within 1-2 mile zone to west -with larger areas occurring in the 1-3 mile zone to the south	large area to south-west between CNR tracts and Highway 24 -limits development in this direction	airport located east of Guelph -study required	

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
Kitchener-Waterloo	<p>small area of Class one land to north in 2-3 mile zone</p> <p>-urban expansion would have little impact on Class one land</p>	<p>entire 0-2 mile zone is in Class 2 and 3 land</p> <p>-2-3 mile zone permits possible expansion into a northeast - southwest corridor between Kitchener-Waterloo and Preston</p>	<p>two prime recreation areas are within the 2-3 mile zone</p>	<p>sizeable woodland areas to northeast in 2-3 mile zone near Eribsville, several areas to west, north and south of Petersburg, and a number smaller areas scattered throughout 0-3 mile zone</p> <p>-development should be curtailed in large tracts</p>	<p>potential sand and gravel deposits in spillway running through Kitchener-Waterloo and also in large kame moraine area to west</p> <p>-existing operations of this urban area</p>	<p>-some Class one land in 2-3 mile zone from Kitchener-Waterloo</p> <p>-significant portion of Class one land to the west and north of this urban area</p>

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones
Kitchener-Waterloo	<p>-some small areas within 2-3 mile zone to east</p>	<p>-fairly large flood area associated with Grand River to east</p> <p>-important obstacle in eastward expansion of Kitchener-Waterloo</p>	<p>scattered marsh or poorly drained areas within 0-3 mile zone to east and west</p>	<p>medium size area to east of Waterloo in the direction of Bridgeport</p>	<p>Waterloo Wellington Airport east of Kitchener requires study</p>

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
Stratford	a large amount of Class one land in 0-3 mile zone extending in all directions	Class 2 and 3 land makes up remainder of 0-3 mile zone	none within 0-3 mile zone	large areas in 0-1 mile zone immediately south of Stratford and in Gads Hill area in 2-3 mile zone to northeast	potential sand and gravel in spillway in 0-3 mile zone to north	none within 0-3 mile zone
	-the problem of physical expansion on Class one land would be difficult to avoid				-no existing extraction operations	
	-the preferred direction of growth would be determined from analysing agriculture land use trends as well as an examination of the areas capabilities on a micro level			-smaller areas in 0-1 zone east and west		
				-physical expansion into larger areas should be prevented		

Land Capabilities

Urban Centre	Land Capabilities				Mineral Resources	Wildlife Areas (Ungulates)
	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands		
Clinton	Some Class one land in 1-3 mile zone to north and west -considerable expansion is possible without infringing on large tract of Class one land	covers most of the remaining 2-3 mile zone -urban expansion will result in loss of Class 2 and 3 land	none within 0-3 mile zone	small scattered areas in 0-3 mile zone to south, 1-3 mile zone to northeast and 2-3 mile zone to east and west	potential sand and gravel in kame moraine area to north -no existing extraction	Class one ungulate land situated at the western and southern perimeter of the 3 mile zone
Physical Development Constraints						
Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones	
	small area southwest in 1-2 mile zone -no significant influence on future development	small area to south in 0-1 mile zone -minor impact on development	none within 0-3 mile zone	small area 2-3 mile zone to west	none within 0-3 mile zone	

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	<u>Land Capabilities</u>			Mineral Resources	Wildlife Areas (Regulates)
			Prime Recreation Area	Woodlands			
Elmira	within 3 mile zone the entire area to the south below Highway 86 and the area to the east is Class one agricultural land physical expansion to the northwest is possible without infringing on Class one land	area to the northwest within 3 mile zone -urban expansion in this direction cannot help but result in the loss of Class 2 and 3 agricultural land	none within 0-3 mile zone	small areas in 1-3 mile zone to southeast along Canagigue Creek, in 0-2 mile zone to north-west	potential sand and gravel deposit in spillways particularly to north and west -existing extraction operation		Class one land for ungulates covers 3 mile zone except for small area to northwest

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	<u>Physical Development Constraints</u>			Airport Noise Zones
			Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas		
Elmira	none within 0-3 mile zone	none within 0-3 mile zone	large marsh area in 0-3 mile zone south of Elmira -small marsh areas to north and east	small area in 2-3 mile zone east of Elmira zone	none within 0-3 mile zone	

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
<u>Exeter</u>	<p>0-1 mile zone entirely Class one land, 1-2 mile zone all Class one except area to west</p> <p>-Class one in northern part of 2-3 mile zone</p> <p>-expansion of Exeter would mean the loss of number one land</p>	<p>Class 2 and 3 land in remainder of 0-3 mile zone</p>	<p>none within 0-3 mile zone</p>	<p>large area in 2-3 mile zone to west</p> <p>-physical expansion into this area should be prevented</p>	<p>none within 0-3 mile zone</p>	<p>entire 0-3 mile zone is Class one for ungulates</p>

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Area	Airport Noise Zone
<u>Exeter</u>	<p>none within 0-3 mile zone</p>	<p>none within 0-3 mile zone</p>	<p>none within 0-3 mile zone</p>	<p>none within 0-3 mile zone</p>	<p>none within 0-3 mile zone</p>

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land		Prime Recreation Areas		Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
		Land	Land					
Harriston	about 2 sq. miles of Class one land to north in 0-2 mile zone and some in 2-3 mile zone to west	remainder of land in 0-3 mile zone	none within 0-3 mile zone	large tracts to north and west in 1-3 mile zone	potential sand and gravel deposits in spillways in the form of narrow bands east, west and south leading out of Harriston	none within 0-3 mile zone		
	-physical expansion does not have to infringe on Class one land	-urban expansion will result in loss of Class 2 and 3 land		-smaller areas to southwest in 0-3 mile zone				
Harriston				-development should be prevented in large tracts				
<u>Physical Development Constraints</u>								
Harriston	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones			
	none within 0-3 mile zone	none within 0-3, mile zone	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone			

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
Mitchell	large amount throughout entire 0-3 mile zone with area to east and north-east having the smallest area of Class one land	remainder of land in 0-3 mile zone -urban expansion will result in loss of Class 2 and 3 agricultural land	none within 0-3 mile zone	none within 0-3 mile zone	potential sand and gravel deposits in spillway to west -no existing extraction operation	entire area in 0-3 mile zone is Class one

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones
Mitchell	none within 0-3 mile zone	small area to south along Thames River	none within 0-3 mile zone	a number of scattered small areas to north and northwest in 0-3 mile zone	none within 0-3 mile zone

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Land Capabilities			Wildlife Areas (Ungulates)
			Prime Recreation Area	Woodlands	Mineral Resources	
Mount Forest	considerable Class one land in 0-3 mile zone to south	remainder of land in 0-3 mile zone	none within 0-3 mile zone	large area to north-west in 0-3 mile zone, small areas in 1-3 mile zone to south	potential sand and gravel deposits in spillway to east and south and in Esker to north	none within 0-3 mile zone
	-not much room for urban expansion to south without a loss of number one land				-no existing mining operation	
<u>Physical Development Constraints</u>						
Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Physical Development Constraints		Airport Noise Zones	
			Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas		
Mount Forest	none within 0-3 mile zone	small area along South Saugreen River to west in 2-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone	

Land Capability

Urban Centre	Class I Agricultural Land	Class II & III Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
New Hamburg	small area in 2-3 mile zone to south -physical expansion is possible with little infringement on Class one agricultural land	remainder of land in 2-3 mile zone -physical expansion will mean loss of Class 2 and 3 land	none within 0-3 mile zone	-small areas to south in 0-1 mile zone -large tracts in 2-3 mile zone to east, west and north -development should be prohibited in large tracts	potential sand and gravel deposits to north in 0-2 mile zone -no existing extractive operation	none within 0-3 mile zone

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones
New Hamburg	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone

Urban Centre	Land Capabilities					Wildlife Areas (Ungulates)
	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	
St. Mary's	<p>-block of Class one land to northeast in 0-3 mile zone</p> <p>-physical expansion in other areas is possible without infringing on Class one land</p>	remainder of land in 2-3 mile zone	none within 0-3 mile zone	-small area to south-west	<p>potential sand and gravel deposits to north in 0-3 mile zone</p> <p>-existing extractive operation (St. Mary's Cement Company)</p>	<p>except for the area to the north, entire 0-3 mile zone is Class one ungulates</p>
Physical Development Constraints						
Urban Centre	Physical Development Constraints					Airport Noise Zones
	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas		
St. Mary's	small area in 1-3 mile zone to north	small area along Thames River north of St. Mary's	none within 0-3 mile zone	<p>large area in 0-1 mile zone to south</p> <p>-small area in 0-1 mile zone to south east and large areas in 1-2 mile zone to north and 2-3 mile zone to northeast</p> <p>-development will be limited in direction of large areas</p>	none within 0-3 mile zone	

Land Capabilities

Urban Centre	Class 1 Agricultural Land	Class 11 & 111 Agricultural Land	Prime Recreation Areas	Woodlands	Mineral Resources	Wildlife Areas (Ungulates)
<u>Seaforth</u>	large area of Class one land remainder of land in 0-3 to south in 0-3 mile zone and small area to north in 0-3 mile zone -physical expansion is possible to the west and southwest without loss of number one land	mile zone is Class 2 and 3	none within 0-3 mile zone	small tract in 0-1 mile zone to south and in 1-3 mile zone to west	potential sand and gravel deposits in esker which runs as a narrow band in 0-3 mile zone east of Seaforth -existing extractive operation	entire 0-3 mile zone to the south in same area as large block of Class one agricultural land -no Class one ungulate land to the northwest

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones
<u>Seaforth</u>	none within 0-3 mile zone	none within 0-3 mile zone	none within 0-3 mile zone	small area in 0-1 mile zone to east	none within 0-3 mile zone

Land Capabilities

Wildlife Areas
(Ungulates)

Mineral Resources

Woodlands

Prime Recreation Areas

Class 1 & 111 Agricultural
Land

Class 1 Agricultural Land

Urban
Centre

Wingham	0-3 mile zone north of Wingham	remainder of area within 0-2 mile zone except in west where there is some low capability agricultural land in 1-2 mile zone	none within 0-3 mile zone	large area to northwest 1-3 mile zone and to east in 2-3 mile zone	potential sand and gravel deposits in large spillway to west and south of Wingham	none within 0-3 mile zone
		-to west and north in 2-3 mile zone there is a significant amount of low capability agricultural land - although expansion is possible to the west, it would have to be at the expense of some Class 1, 2, and 3 land		-small areas in 0-1 mile zone to west and 1-3 mile zone to north and south	-no existing extrac-tion operation	
				-physical development should be prevented in large areas		

Physical Development Constraints

Urban Centre	Excessive Slope	Land Liable to Flooding or Waterlogging	Water Bodies, Poorly Drained or Marsh Areas	Large Excavated Areas	Airport Noise Zones	
Wingham	small area in 1-3 mile zone to south and north	along Maitland River to north in 0-1 mile zone, west in 0-3 mile zone, and east in 0-1 mile zone	large marsh or poorly drained area in 1-3 mile zone to northwest	none within 0-3 mile zone	none within 0-3 mile zone	
		-severely limits development to west and northwest	-scattered marsh areas in 1-3 mile zone			
			-limits development in this area			

TABLE 3

AN INITIAL EVALUATION OF LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS FOR SELECTED URBAN CENTRES

[illegible]

APPENDIX

APPENDIX I

METHOD AND CRITERIA FOR LAND CAPABILITY AND DEVELOPMENT CONSTRAINTS MAP

The base map, over which land capability and development constraint overlays are placed, consists of a generalized regional land use map produced by the Regional Development Branch (See Appendix II). The land use map depicts as land use categories the following: residential, seasonal residential, commercial, industrial, forestry, agriculture, outdoor recreation, quarries, sand and gravel pits, water bodies, Indian Reserves, airports, railways, and major roads.

The generalized land use map provides an essential overview of the characteristics of the region - expressing in broad terms the scale and pattern of a wide range of activities and resources. It reveals the geographical position and extent of each major use and illustrates land and space uses as they reflect specific clusters of human activities. The identification of land use within a region will assist in the creating of an impression of the type and range of land uses, and their areal variation and will establish the relationship between land use and the physical environment.

Overlay Maps

1. A number of overlays were prepared from Canada Land Inventory Capability Maps (1:250,000).

(A) Land of High Soil Capability for Agriculture

It was assumed that given the possibility of choice, prime agricultural land should not be employed for urban land uses on the grounds that this sterilizes an irreplaceable resource, all but irreversibly. Land classified as 1, 2, or 3, for agriculture production according to the Canada Land Inventory was selected initially as unsuitable for urbanization. Two overlays were produced for the Midwestern Region: overlay #1 shows Class 1 land for agriculture production and overlay #2 shows Class 2 and 3 land combined.¹ In some regions it may be desirable to select only Class 1 land as unsuitable for urbanization.

Overlay # 1

Class 1 - Land for Agriculture Production

Soils in this class have no significant limitations in use for crops. Soils in Class 1 are level or have very gentle slopes; they are deep, well to imperfectly drained and have a good water-holding capacity. They are easily maintained in good tilth and productivity, and damage from erosion is slight. They are moderately high to high in productivity for a wide range of field crops adapted to the region.

-
1. Overlay #1 includes only Class 1 land on the Canada Land Inventory Soil Capability Map.
Overlay #2 (a) Includes Class 1 on the Canada Land Inventory Soil Capability Map in any combination with another class. (b) Includes Class 2 on the Canada Land Inventory Soil Capability Map. (c) Includes Class 2 on the Canada Land Inventory Soil Capability Map in combination with another class, wherein Class 2 comprises 50 per cent or more of that combination. (d) Includes Class 3 on the Canada Land Inventory Soil Capability Map.

Overlay # 2

Combination of Class 2 and 3 Land for Agriculture Production

Class 2

Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices. Soils in Class 2 are deep and have a good water-holding capacity. The limitations are moderate and the soils can be managed and cropped with little difficulty. The soils are moderately high to high in productivity for a fairly wide range of field crops adapted to the region. Soils in this class are not generally suited to as wide a range of crops as the soils in Class 1. Also more intensive conservation measures, tillage practices, or special soil-conserving systems may be required. The combination of practices vary from place to place depending on the climate, soil and regional cropping systems.

Class 3

Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices. Soils in Class 3 have more severe limitation than those in Class 2 and conservation practices are more difficult to apply and maintain. Under good management these soils are fair to moderately high in productivity for a fairly wide range of field crops adapted to the region.

Each soil in this class may have one or more alternative uses or practices required for use but the alternatives may be fewer than for soils in Class 2.

(B) Land of High Recreation Potential

Land classified from 1 to 4 according to the Canada Land Inventory Recreation Land Capability maps was used for the purpose of designating land of high recreation potential. The Class 1 to 4 recreation land capability units constitute the important resource elements in the regional recreation system. They range from very high to moderate capability for outdoor recreation. The basis of classification is the quantity of recreation which may be generated and sustained per unit area of land per year under perfect market conditions.

The following twenty-five types of recreation features are classified in the Canada Land Inventory recreation capability system:

- Angling
- Beach
- Canoe Tripping
- Deep Inshore Water
- Vegetation
- Waterfalls and Rapids
- Glacier
- Historic Site
- Gathering and Collecting
- Organized camping
- Landforms
- Small Surface waters
- Lodging
- Upland Wildlife
- Cultural Landscape Pattern
- Topographic Patterns
- Rock Formations
- Skiing Areas
- Thermal Springs
- Deep Water Boat Tripping
- Viewing
- Wetland Wildlife
- Miscellaneous
- Family Boating
- Man-made Features

(C) Land of High Potential for Forest Production

Using the Canada Land Inventory Forestry Capability Maps Class 1, 2, and 3, land was selected to represent land of high potential for forest production.¹ Two overlays will be prepared for each region. One overlay will show Class 1 land and the other Class 2 and 3 combined. In some regions it may be desirable to use only the Class 1 overlay.

Overlay # 1

Class 1 - Land for Forest Production

Class 1

Lands having no important limitations to the growth of commercial forests. Soils are deep, permeable, of medium texture, moderately well-drained to imperfectly drained, have good water-holding capacity and are naturally high in fertility. They are not subject to extremes of temperature or evapo-transpiration. Productivity is usually greater than 111 cubic feet per acre per annum.

Overlay #2

Combination of Class 2 and 3 Land for Forest Production

Class 2

Lands having slight limitations to the growth of commercial forests. Soils are deep, well drained to moderately well-drained,

1. Canada Land Inventory Forest Land Capability Maps have not yet been completed for the Midwestern Ontario region. This information will be incorporated into the Land Capability and Development Constraints Map when it becomes available.

of medium to fine texture and have good water-holding capacity. Productivity is usually from 91 to 110 cubic feet per acre per annum.

Class 3

Lands having moderate limitations to the growth of commercial forests. Class 3 soils may be deep to somewhat shallow, well-drained to imperfectly drained, of medium to fine texture with moderate to good water-holding capacity. They may be slightly low in fertility or suffer from periodic moisture imbalances. Productivity is usually from 71 to 90 cubic feet per acre per annum.

(D) Land Having a High Potential for the Production of Wildlife (Ungulates)

Using the Canada Land Inventory Wildlife Capability Maps, Class 1, 2, and 3, land was selected to represent land of high potential for wildlife (ungulates) production. Two overlays are to be prepared for each region. One overlay will show Class 1 land for the production of ungulates and the other Class 2 and 3 land combined. In the Midwestern Economic Region only Class 1 land was considered to be of some regional significance.

Overlay # 1

Class 1 - Land for the Production of Ungulates

Class 1

Lands having no significant limitations to the production of ungulates. Capability of these lands is very high. They provide

a wide variety and abundance of food plant and other habitat elements.

Overlay # 2

Class 2 and 3 - Land for the Production of Ungulates

Class 2

Lands having very slight limitations to the production of ungulates. Capability of these lands is high. Slight limitations are due to climatic or other factors which have a slight adverse effect on the habitat.

Class 3

Lands having slight limitations to the production of ungulates. Capability on these lands is moderately high, but productivity may be reduced in some years. Slight limitations are due to characteristics of the land that affect the quality and quantity of habitat, or to climatic factors that limit the mobility of ungulates or the availability of food and cover.

2. LAND PHYSICALLY UNSUITABLE FOR
INTENSIVE URBAN DEVELOPMENT

Land physically unsuitable for intensive urban development is land which, from a purely physical standpoint, is difficult, costly, or undesirable to use intensively for building purposes. Zones of land physically unsuitable for intensive urban development were determined by analysing the Midwestern Region in terms of

such physical constraints as excessive slope, land liable to flooding or waterlogging, water bodies, poorly drained or marsh areas, large excavated areas, and airport noise zones.

The criteria used for designating areas of land physically unsuitable for intensive urban development include the following:

(a) Excessive Slope

Consists of all land areas of over twelve per cent slope.

Source: analysis of 1:50,000 National Topographic Maps. Slopes of more than twelve per cent were assumed to cause a sharp increase in the costs of streets and utilities. Furthermore, the heavy cuttings and fillings required in the preparation of such sites for development cause soil erosions and settlement problems. Sites with slopes of more than twelve per cent were assumed suitable only for low density residential developments.

(b) Land Liable to Flooding or Waterlogging

Consists of all land areas which tend to be subjected to permanent or periodic flooding or waterlogging.

Source: analysis of 1:50,000 National Topographic Maps and flood line data available from the Conservation Authorities Branch, Department of Energy and Resources Management. Flood plains should be kept free of intensive urban development.

(c) Poorly Drained or Marsh Areas

Consists of all land areas which are permanently characterized by poor drainage or marsh conditions.

Source: analysis of 1:50,000 National Topographic Maps and County Soil Reports.

(d) Large Excavated Areas

Any land area of over 25 acres which has undergone extensive excavation. An example of such an area is a large limestone quarry or sand and gravel operation.

Source: analysis of 1:50,000 National Topographic Maps and regional land use maps.

(e) Airport Noise Zones

Presence of an airport, especially one of international scale exerts a significant influence upon land uses in the area -- mainly detrimental. Zones of 90 and 80 decibels could, for example, be identified and designated as unsuitable for development. Several government agencies are currently working on the problem of effectively determining noise contours for airports and the impact of different noise levels on surrounding land use. The airport noise zoning system finally accepted by the government will be used as an input in the Regional Capability and Development Constraints Map.

3. EXISTING FOREST AREAS

Existing woodlands are extremely valuable in diminishing runoff, reducing erosion and sedimentation and sustaining wildlife in addition to their scenic and recreation uses. Therefore, it is essential that they should be considered as an important regional value and thus only marginally capable of urbanization. Commercially productive and non-productive forest tracts are shown on the generalized regional land use maps (scale 1:250,000). Forested areas considered to be of high preservation usefulness are indicated on a separate overlay map.

4. MINERAL RESOURCE ZONES

Areas of potential mineral extraction (deposits of sand and gravel, limestone, and dolomite) were mapped from mineral resource maps supplied by the Department of Mines. The concept of importing minerals from other regions was assumed less desirable than planning for the efficient exploitation of mineral resources which exist in the Midwestern Region. Thus, alternative development patterns which allow conservation and eventual exploitation of valuable mineral resources should be supported.

APPENDIX II

REGIONAL LAND USE MAPPING PROGRAMME

1. Two Types of Land Use Maps

Two types of land use maps are being produced for each economic region:

- (a) Work maps at the scale of 1:50,000
- (b) Generalized regional maps at the scale of 1:250,000

The effective date of mapping for both types of maps varies according to the year of published information available for each region. Similarly, the effective date of mapping also differs for different sections of a given region. No attempt will be made to reconcile the above problem by updating existing land use information within the field survey work.

2. Work Maps

The detailed work maps at a scale of 1": 50,000 are the first maps to be prepared for each region. Canada Land Inventory (ARDA), Existing Land Use Maps are to be used as base maps upon which additional land use information will be plotted. The existing land use categories depicted by the Canada Land Inventory maps are outlined in Figure 1.

The Canada Land Inventory maps are the major source of rural land use information. The following land use categories which appear on the legend in Figure 1 were grouped for presentation purposes.

1. In southern Ontario where agriculture is the dominant land use, productive and non-productive woodland are grouped together into a single land use class. Land classified as being in some form of agriculture production is left uncoloured.

2. In Northern Ontario where forestry is the dominant land use, horticulture, orchard and vineyards and cropland uses are combined on the one hand, and improved pasture and forage crops and rough grazing and rangeland on the other. The two new land use categories are coloured as separate land use classes. Land classified as being in some form of forestry production remains uncoloured.

Land use maps prepared by the Special Research Section, Community Planning Branch of the Department of Municipal Affairs are to form a principal source of urban land use information. Residential, seasonal residential, commercial and industrial land use are to be added to Canada Land Inventory base maps from Community Planning Branch maps (see Figure 2 for legend of DMA maps). The land use maps of the Department of Municipal Affairs show a fairly large range of variance in terms of scale, date, and content, for different sections of the Province. Municipal planning department urban land use information is to be used wherever it is more suitable than that of the Community Planning Branch. For example, the land use data from the Waterloo Area Planning Board on Waterloo-South Wellington counties is superior in terms of detail and date. Conservation Authority land holdings are to be obtained from the Conservation Authorities Branch, Department of Energy and Resources Management.

The work maps form the basis from which the generalized land use maps (1:250,000) are compiled. The large-scale 1:50,000 maps reveal a more precise and detailed breakdown of the major land uses. Moreover, they indicate by way of symbol the regional location and distribution of the different agriculture land uses as shown in Figure 1. A record of changes in land use should be kept on the large-scale maps as the plan for each region evolves.

3. Generalized Regional Maps

The generalized regional land use maps were prepared at the scale of 1":250,000 from the detailed Canada Land Inventory maps. The land use categories to be used for the generalized maps are outlined in Figure 3. The residential category includes in addition to all types of dwelling units institutional land uses such as schools and churches. The forested areas are a combination of productive and non-productive woodland as outlined on the Canada Land Inventory maps. They are a minimum of 150 acres in size.

The generalized land use map provides an essential overview of the characteristics of the region - expressing in broad terms the scale and pattern of a wide range of activities and resources. It reveals the geographical position and extent of each major use and illustrates land and space uses as they reflect specific clusters of human activities. The identification of land use within a region will assist in the creating of an impression of the type and range of land uses, and their areal variation and will establish the relationship between land use and the physical environment.

FIGURE 1

INDEX

Land Use Mapping Project ARDA

<u>Symbol</u>	<u>Category Names</u>
B	Urban Built-up Area
E	Urban Mines, Quarries, Sand and Gravel Pits
O	Urban Outdoor Recreation
H	Horticulture
G	Orchards and Vineyards
A	Cropland
P	Improved Pasture and Forage Crops
K	Rough grazing and Range Land
T	Productive Woodland
U	Non-Productive Woodland
M	Swamp, Marsh or Bog
S	Unproductive Land
L	Unproductive Land
Z	Water

FIGURE 2

LEGEND FOR LAND USE MAPS
DEPARTMENT OF MUNICIPAL AFFAIRS

1. Residential
2. Residential Vacant or Under Construction
3. High density Residential (R4 and over).
4. Summer Residence
5. Farm
6. Farm Vacant or under Construction
7. Commercial
8. Industrial
9. Primary
10. Other
11. Recreation Resorts.

The actual content of the legend shows a slight variation from one section of the Province to another.

FIGURE 3

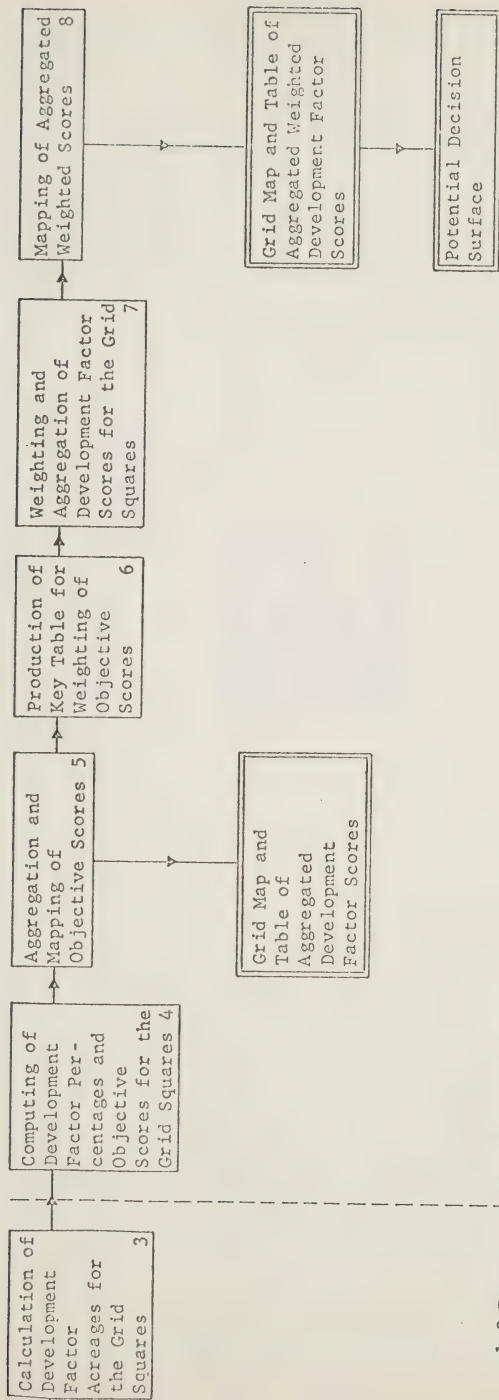
GENERALIZED LAND USE MAPPING

(1:250,000)

<u>Legend</u>	<u>Prisma Colour #</u>
Residential	915
Seasonal Residential	939
Industrial and Commercial	932
Quarries, Sand and Gravel Pits	934
Outdoor Recreation	913
Forestry	909
Agriculture	911
Indian Reserve	963
Airport	963 & 935
Railway	935
Major Roads	935
Water Bodies	309

FIGURE I

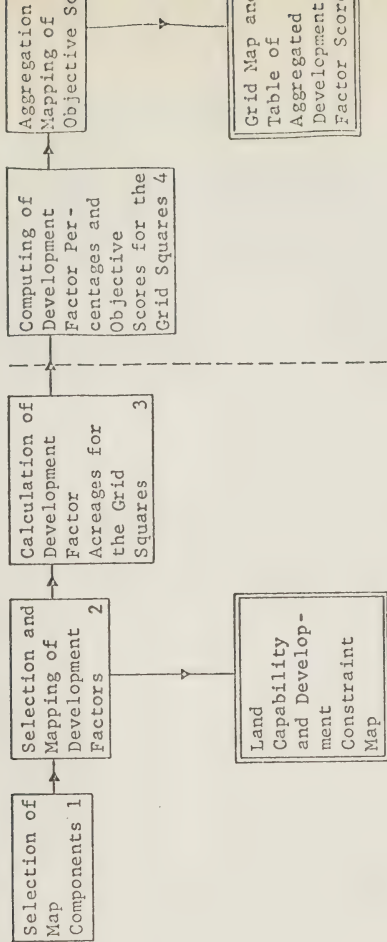
AN OUTLINE OF THE METHODOLOGY FOR THE IDENTIFICATION
AND ANALYSIS OF LAND DEVELOPMENT POTENTIALS



1-3 Input

4-8 Computer Output

AN OUTLINE OF THE METHODOL AND ANALYSIS OF LAND



1-3 Input

4-8 Computer Output

FIGURE II

COMPUTER MAP OUTPUT



APPENDIX I

MAP COMPONENTS AND DEVELOPMENT FACTORS

1. Map Components

- 1.1 Existing land use
- 1.2 Land capability
- 1.3 Land physically unsuitable for urban development
- 1.4 Socio-economic factors.

2. Development Factors

Under each of the map components the following development factors are mapped at a scale of 1.25 miles to the inch.

2.1 Existing Land Use

2.1.1 Woodland areas

- (a) larger than 100 acres
- (b) smaller woodland areas considered on basis of regional significance; that is woodlands designated as special nature reserves and wilderness areas by the Parks Branch, Department of Lands and Forests.

2.1.2 Large institutional holdings and public lands

Examples include public outdoor recreation areas, Indian Reserves, agreement forests, and military reserves. There is also the possibility of including information from the recreation facilities inventory at a later stage.

2.1.3 Urban areas

Where over 50 percent of a grid square is urban

then it is excluded for purposes of this analysis. The entire process could be refined to involve a more detailed analysis of land development potentials in relation to urban centres. For example, the utilization of a one kilometre grid square could result in this additional refinement. However, an attempt should be made to avoid introducing "micro planning" into the Regional Development Planning programme.

2.2 Land Capability

2.2.1 Land capability for outdoor recreation

Two main categories were derived from Canada

Land Inventory information:

- (a) Class I-III land which has a very high to moderately high capability rating for outdoor recreation based usually on intensive or moderately intensive activities. The Class 1, 2 and 3 areas can be considered as being suitable for public park type development.
- (b) Class IV-VI land which has a moderately low to low capability rating for outdoor recreation based on dispersed activities. Class IV-VI land is important in terms of regional open space. For example, it can be used to link areas of intensive recreation activity into a parks system. Under the Canada Land Inventory system land capability for recreation is determined primarily on the basis of an evaluation of carrying capacity. As a result, Class IV-VI recreation land rates low because it cannot sustain heavy use. That is, fragile recreation resources such as the Niagara Escarpment which rank low in terms of carrying capacity are assigned a low capability rating.

2.2.2 Areas of high soil capability for agriculture

Two main categories were derived from Canada

Land Inventory information:

- (a) Class I land plus Class I land in combination with Class II and III land where Class I land comprises 80 percent or more of the land unit.
- (b) Class II and III land plus Class I in combination with Class II and III land where Class II and III land makes up more than 20 percent of the land unit; plus where Class II land constitutes 80 per cent or more of a land unit.

It should be noted that the Canada Land Inventory soil capability for agriculture is based on a mixed type of farming operation. Consequently, high commercial farming, such as that found in the Niagara Fruit Belt, are not separated out. However, the Canada Land Inventory Soil Capability for Agriculture is fairly adaptable to the Midwestern Ontario Economic Region.

2.2.3 Areas of high capability for forestry production

- same categorization as 2.2.2.

- information not available until March 1970

for Midwestern Economic Region.

2.2.4 Areas of high capability for wildlife production

- (a) Woodland Wildlife, Class 3 land capability for whitetail deer.
- (b) Waterfowl, Class 1, 2 and 3 land capability for Ducks. Class 1, 2 land capability for Geese.
- (c) Farmland Wildlife, Class 1, 2 land capability for Hungarian Partridge.

2.2.5 Mineral resource zones

Examples are sand and gravel deposits and

2.2.2 Areas of high soil susceptibility for erosion

Two soil susceptibility maps derived from Canada

land inventory information

(a) Class 1 land plus Class 2 land in
combination with Class 3 and 4 land
where Class 1 land comprises 50 percent
or more of the land unit.

(b) Class 1 and 2 land plus Class 3 and 4
land in combination with Class 1 and 2 land
where Class 1 and 2 land comprises 50 percent
or more of the land unit.

It should be noted that the Canada Land
Inventory soil susceptibility for erosion
is based on a wide range of factors
including, but not limited to, soil
texture, soil structure, soil depth,
parent material, and vegetation cover.
The Canada Land Inventory Soil Susceptibility
Map is based on the following criteria:

2.2.3 Areas of high susceptibility for erosion

- soil susceptibility as 2.2.2

- information on available water capacity

the following factors:

2.2.4 Areas of high susceptibility for erosion

(a) Available water capacity, Class 1 and 2 land
for erosion risk.

(b) Available water capacity, Class 1, 2 and 3 land
for erosion risk.

(c) Available water capacity, Class 1, 2 and 3 land
for erosion risk.

2.2.5 General erosion risk

General erosion risk and general erosion risk

HT Ontario. Dept. of Treasury
395 and Economics. Regional
C22 Development Branch. Special
05 Projects Section
1969 Land capability and develop-
ment constraints map - Midwest-
ern Ontario economic region
Architect

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